

LEAD INDUSTRIES ASSOCIATION, INC.

292 MADISON AVENUE

NEW YORK 17, N. Y.

LEAD PAINT PIGMENTS, NEW AND OLD*

D. R. Carter
Vice President, Chemicals & Metals Div.
The Eagle-Picher Co.

Although the paint industry continues to represent a sizable market for lead pigments, the consumption of some of these pigments for use in the manufacture of paints has fallen off rather drastically in recent years. The tonnage for those pigments constituting the largest percentage of lead compounds used by the paint industry is shown graphically for the years 1955 and 1960. Complete data for 1961 is not yet available but indications are that total paint sales were unchanged, and consumption of lead pigments were about the same as in 1960.

Slide # 1

The metallic lead, sulfate and lead silicate pigments have not been included in this graph to avoid disclosing individual company's confidential data.

The white lead pigments, carbonate, silicate and sulfate, are used primarily in production of exterior trade sales paints with house paint primers accounting for the largest consumption. The paint manufacturer has long recognized the need for lead pigments to obtain adhesion, moisture resistance and flexibility in the formulation of durable foundation coats. White lead carbonate is still used in paste paints and in high lead finish coats and along with white lead silicate finds a limited market in the manufacture of tint base or colored house paints. The white lead content of leaded zinc oxide represents the major percentage of the lead pigments used in the manufacture of finish coats for application on wood.

The future prospects for these old line pigments in the manufacture of house paints are, however, highly vulnerable. Technological advances in the coatings industry, the increasing use of exterior substrates other than wood, the industrial finishing of wood, adversely affect the trade sales paint market.

Paints based on the new film formers, particularly the latex resins are capturing an increasing share of the exterior trade sales paints. These emulsion paints offer an impressive list of advantages and are rapidly gaining acceptance as limitations of product application are being overcome. Very few of these latex paints are currently formulated with lead pigments.

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The ever increasing number of older homes being covered with cement asbestos shingles and insulated siding, imitation brick and stone such as Insul-Brick, PermaStone, etc., in preference to painting further diminishes the use of lead containing paints. The lumber industry, in an effort to defend their market, are also moving rapidly toward the industrial finishing of wood with coating that use little or no lead pigment.

On the more optimistic side, we wish to acknowledge the efforts of the Lead Pigments Committee and the Expanded Research Program of the Lead Industries Association to assure a continuing market for lead pigments in exterior trade sales house paints. Cooperative research and promotion by the Association and the pigment producers, gives promise that selected lead pigments will be used in the new water thinnable paints based on the latex and emulsified linseed vehicles. Water thinnable house paints containing lead pigments show excellent stain control, resistance to nailhead staining and rust and minimize failure by warping, cupping and cracking of the wood substrate to which these paints are applied.

Slide #2 & #3

These slides depict the excellent durability and superior general performance of lead containing water thinnable house paints. Paint systems on the right half of all panels contain no lead. We are pleased to report that as a result of the cooperative effort within the pigment industry, the paint manufacturers are rapidly evaluating lead compounds for use, or have incorporated them in their water thinnable exterior paints.

The production of industrial finishes is now in excess of 300 million gallons per annum, or 47% of the total paint manufactured, yet the market for lead pigments has not paralleled the growth and diversity of this segment of the coating industry.

Automotive finishes represent the largest class of industrials but little lead pigment is being used in the formulation of these finishes. This market has long been denied us for two obvious reasons - economics and toxicity. The unitized body construction recently adopted by the automotive industry has, however, created a definite need for improved corrosion inhibitive finishes, and establishes a market potential for lead pigments if we can overcome the stigma of toxic lead compounds.

Application research aimed at the development of automotive primers utilizing lead is being sponsored under your Expanded Research Program. This work shows much promise for lead containing corrosion resistant primers that surpass the performance of existing paint coatings and are cost competitive.

Slide #4

Shown here is a performance comparison of three commercial dipping primers: a control primer, an experimental lead containing dipping primer, and a zinc rich paint for automotive use. The superior corrosion inhibition in salt spray testing is nicely demonstrated by the lead containing primer. Paint manufacturers supplying the automotive industry are evaluating the application of lead pigments in similar dipping primers, and we are pleased to report that several corrosion resistant primers formulated with lead pigments are in actual use by the automotive industry.

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Industrial finishes produced for farm machinery, road building equipment, and implement enamels utilize only a small volume of chrome yellows and greens. This class of equipment should provide a larger market for lead bearing corrosion resistant finishes and we would anticipate increased market possibilities if we are successful in selling the automotive trade. Finishes of this type should also find application in the appliance field and for railroad rolling stock.

Maintenance paints and special marine finishes continue to provide a good outlet for rust inhibitive lead pigments and market conditions coupled with new developments give every indication of increasing consumption of lead pigments in the coming years. Of the many rust inhibitive lead pigments; red lead, lead chromate, basic lead silico chromate, lead silicate, metallic lead and blue lead, red lead continues to be the most important. Volume sales of red lead to the paint industry has been reasonably constant notwithstanding the normal cyclic fluctuations of business. These rust inhibitive pigments heretofore, have been used almost exclusively in the manufacture of anticorrosive primers for shop coats and intermediate coats for steel structures, industrial plants and for marine finishes. The use of lead pigments in finish coat maintenance paints has for many years represented a small volume of the chromate pigments and white lead carbonate. In recent years, new lead pigments have been developed that enable the paint industry to manufacture corrosion resistant finish coats of excellent decorative value and color permanence. Basic lead silico chromate pigment and basic silicate white lead pigments are being used in increasing amounts in the manufacture of corrosion resistant finish coats in a wide range of hues from pastels to dark colors.

The following slides show a few of the many applications of these corrosion resistant finish coats on bridge structures, industrial buildings and tanks.

Slides #5, #6, #7, #8

The market possibilities for lead containing finish coats is just beginning and gives promise of a bright future. Here again we are pleased to note that your Association is pursuing this new market for lead pigments with research and promotional effort.

Traffic paints and guard rail paints represent another area for the potential growth in the consumption of lead pigments. Yellow traffic marking paints represent the largest volume use of chrome pigments in the paint industry and their use is increasing with the nation's expanding highway program. Your Association has been very active on the State and Federal level in lobbying for the use of uniform marking codes, specifying yellow paints for outer lane markings and all cautionary markings such as crossings, no-passing zones, etc. If successful, their efforts will more than double the current consumption of lead chromate in traffic paints. Highway engineers, cognizant of the shortcomings of the current guard rail paints, are also looking to lead as a solution to their problem.

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All factors considered, the future market for lead pigments in the paint industry is excellent. Expansion will depend on the development of improved finishes for new products, and the successful introduction of new lead pigments for use in all classes of protective and decorative coatings. A continued research and promotional effort of individual companies and your Association is essential to this end.